

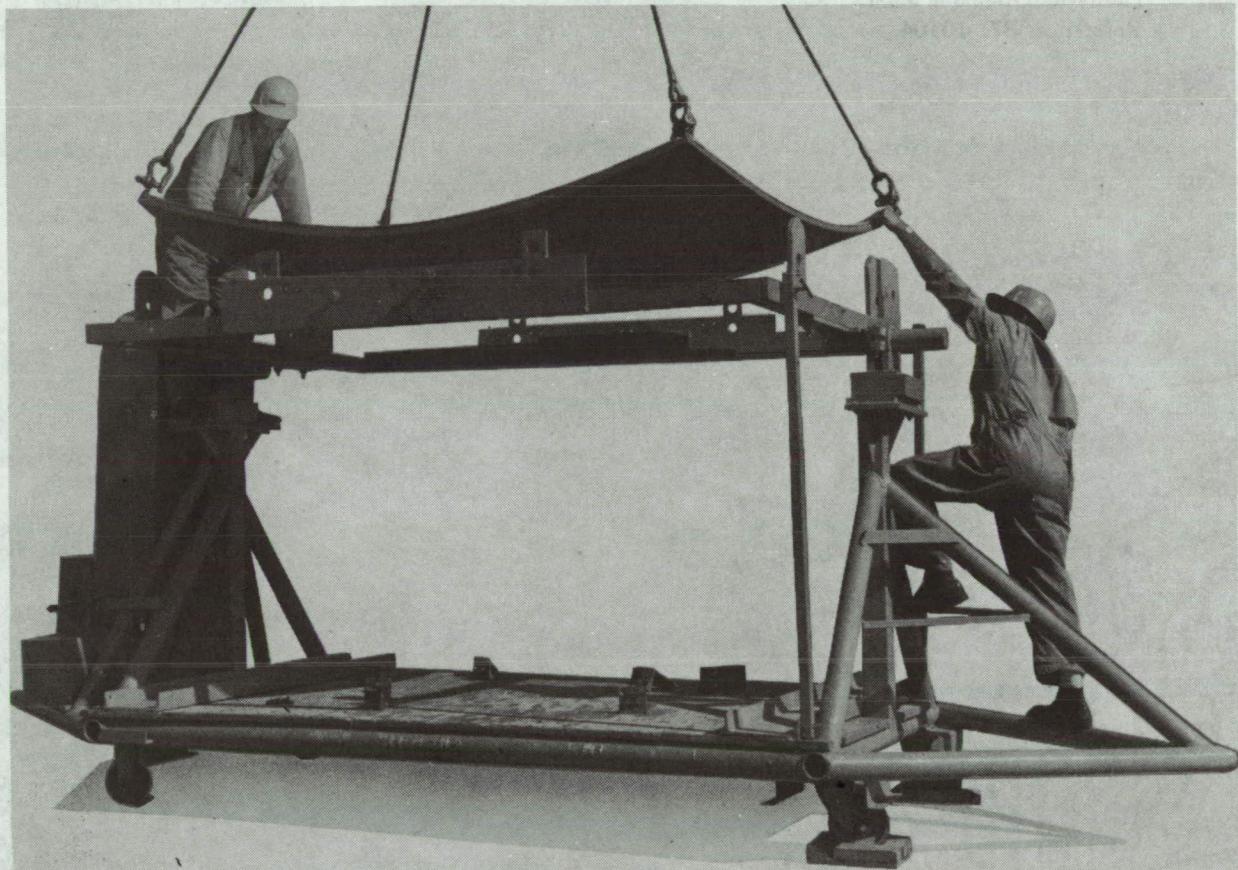
# NASA TECH BRIEF

## Marshall Space Flight Center



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### Removal of Filler Material from Large High Energy Formed Parts



#### The problem:

During high energy forming operations, a bismuth alloy (Cerrobend) is used as a filler to obtain proper contours in large "waffle grid" workpieces. This filler makes the workpiece unwieldy. It is difficult to remove the filler material.

#### The solution:

Apply steam heat at 88.9°C (160°F) to the underside of the workpiece and allow the filler to melt and drain from the "waffle grids".

#### How it's done:

The formed part is lowered onto a handling fixture, comprised of a welded tubular base with an open rectangular frame supported on a pair of uprights so that the part may rotate. The workpiece is secured to the pivotal frame, which is locked into the receiving position by a pair of removable struts. When the workpiece is secured to the fixture, the struts are removed and the workpiece is inverted. The struts are then re-engaged, locking the workpiece in position with the "waffle grid"

(continued overleaf)

side down. A plenum chamber (not shown), which may be covered to reduce heat loss from the chamber, is placed over the workpiece. Steam is introduced into the chamber and heats the workpiece to effect the removal of the filler metal. A welded steel tray, mounted on casters (not shown), is provided to receive the filler metal as it dislodges from the under surface of the workpiece.

**Note:**

Requests for further information may be directed to:

Technology Utilization Officer  
Marshall Space Flight Center  
Code A & TS-TU  
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**Patent Status:**

No patent action is contemplated by NASA.

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